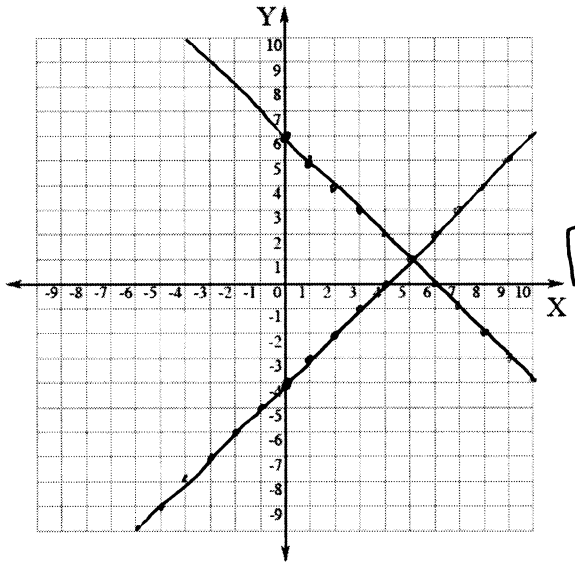
Algebra 1
Common Assessment #6
REVIEW

NAME Key DATE _____ PD _____

Show your work and circle your answers!

1.) Solve the system by graphing: $\begin{cases} x-y=4 \\ x+y=6 \end{cases}$ $y = x-4$ $y = -x+6$



(5,1)

2.) Solve the system by substitution: $\begin{cases} 8x+y=-16 \\ -3x+y=-5 \end{cases}$ $\rightarrow y = -8x-16$

$-3x+(-8x-16)=-5$
$-3x-8x-16=-5$
$-11x-16=-5$
$-11x=11$
$x=-1$

$8(-1)+y=-16$
$-8+y=-16$
$y=-8$

(-1,-8)

3.) Solve the system by elimination: $\begin{cases} 5x+y=9 \\ 10x-7y=-18 \end{cases}$

$-2(5x+y=9) \rightarrow -10x-2y=-18$
$10x-7y=-18$
$-9y=-36$
$y=4$
$5x+4=9$
$5x=5$
$x=1$

(1,4)

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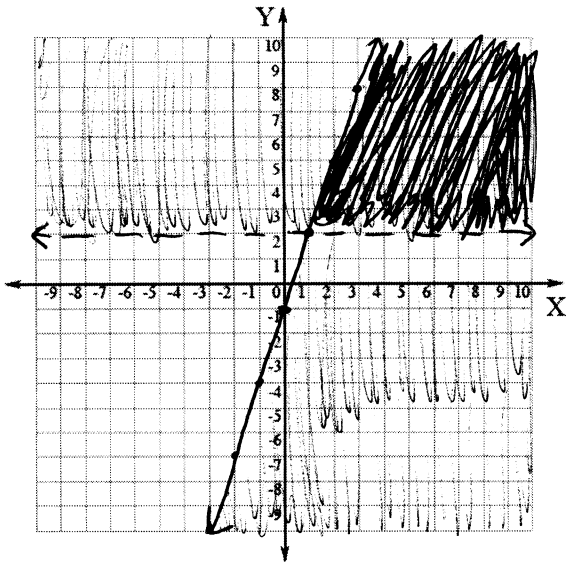
4.) Graph the system: $\begin{cases} y > 2 \\ y \leq 3x - 1 \end{cases}$



5.) Simplify: $3^4 \cdot 3^2 \cdot 3^{-10}$

add powers: $3^6 \cdot 3^{-10} = 3^{-4} = \frac{1}{3^4} = \frac{1}{3 \cdot 3 \cdot 3 \cdot 3} = \boxed{\frac{1}{81}}$

6.) Simplify: $\frac{15x^3y^{-2}}{45xy^{-6}} = \frac{3x^2y^4}{9} = \boxed{\frac{x^2y^4}{3}}$

subtract powers

7.) Simplify: $\left(\frac{xy^3}{y^{12}}\right)^{-3} = \frac{x^{-3}y^{-9}}{y^{-36}} = \frac{y^{36}}{x^3y^9} = \boxed{\frac{y^{27}}{x^3}}$

8.) Simplify: $(a^3b^{12})(a^3b) = \boxed{a^6b^{13}}$

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9.) Simplify: $\frac{35a^4c}{5a^3b^9}$ = $\frac{7c}{b^9}$

10.) Write the following number in Scientific Notation: 0.0076523

7.6523×10^{-3}

11.) Multiply: $(2\times10^{3})(4\times10^{-7})$

8×10^{-4}

12.) What type of polynomial has two terms?

Binomial

13.) What is the degree of this monomial: $-x^{12}y^{4}z^{7}$

degree: $12+4+7 = 23$

14.) What is the degree of this polynomial: $8x^{9}-7x^{3}-6x+1$

degree: 9

15.) Simplify: $6a-4b+11c-7a+4b$

$-a+11c$

16.) Simplify: $(x+2y-7)-(3x+2y-8)-(y+10)$

$x+2y-7-3x-2y+8-y-10$

$-4x-y-9$

17.) Multiply: $x^{2}y(x^{2}y+6x+y)$

$x^4y^2+6x^3y+x^2y^2$

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18.) Multiply: $-5a(6a-4b+2)$

$-30a^2+20ab-10a$

19.) Multiply: $(x+12)(x-12)$

$x^2-12x+12x-144$

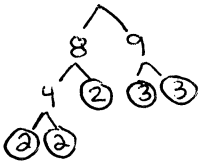
x^2-144

20.) Multiply: $(x^2-6)(x^2+3)$

$x^4+3x^2-6x^2-18$

x^4-3x^2-18

21.) Find the prime factorization of 72.

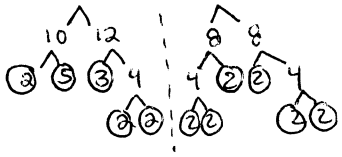


$2^3 \cdot 3^2$

22.) Is 105 a prime or composite number?

$5 \cdot 21 \rightarrow$ composite

23.) Find the greatest common factor of 120 and 64.



120: $2 \cdot 2 \cdot 2 \cdot 3 \cdot 5$
64: $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

$2 \cdot 2 \cdot 2 = 8$

24.) Factor: $17x-51x^4$

$17x(1-3x^3)$

25.) Factor: $2a^5-6a^3b+3a^7c$

$a^3(2a^2-6b+3a^4c)$

26.) Factor: $x^2+9x+14$

$(x+2)(x+7)$

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27.) Factor: $x^2 - 64y^2$

$(x+8y)(x-8y)$

28.) Factor: $4x^2 - 23x - 6$

-24

$4x^2 - 24x + 1x - 6$

$4x(x-6) + 1(x-6)$

$(4x+1)(x-6)$

29.) Factor: $x^2 + 16x + 64$

$(x+8)(x+8)$

30.) Factor: $x^2 + 4xy + 4y^2$

$(x+2y)(x+2y)$

31.) Solve by Factoring: $x^2 + x - 20 = 0$

$(x+5)(x-4) = 0$

$x = -5$ or $x = 4$

32.) Solve by Factoring: $x^2 - 36 = 0$

$(x+6)(x-6) = 0$

$x = 6$ or $x = -6$

33.) Simplify: $\sqrt{225}$

15

34.) Simplify: $\sqrt{48}$

$\sqrt{16}\sqrt{3}$

$4\sqrt{3}$

35.) Simplify: $\sqrt{\frac{4}{25}} = \boxed{\frac{2}{5}}$

36.) Simplify: $\sqrt{a^3b^5c}$

$= \sqrt{a^2 a\, b^4 b\, c}$

$= \boxed{ab^2\sqrt{abc}}$

37.) Simplify: $\sqrt{18a^6b}$

$= \sqrt{9 \cdot 2\, a^6 b}$

$= \boxed{3a^3\sqrt{2b}}$

38.) Add: $7\sqrt{15} + 7\sqrt{5} - 3\sqrt{15}$

$\boxed{4\sqrt{15} + 7\sqrt{5}}$

39.) Add: $-\sqrt{24} + 7\sqrt{54}$

$\sqrt{4}\sqrt{6} \cdot \sqrt{9}\sqrt{6}$

$-2\sqrt{6} + 7 \cdot 3\sqrt{6}$

$-2\sqrt{6} + 21\sqrt{6} = \boxed{19\sqrt{6}}$

40.) Multiply: $\sqrt{3} \cdot \sqrt{6}$

$= \sqrt{18}$

$= \boxed{3\sqrt{2}}$

41.) Multiply: $\sqrt{\frac{1}{9}} \cdot \sqrt{\frac{3}{4}} = \sqrt{\frac{3}{36}} = \frac{\sqrt{3}}{\sqrt{36}} = \boxed{\frac{\sqrt{3}}{6}}$

42.) Multiply: $6\sqrt{3}\left(-1 - 2\sqrt{3}\right)$

$-6\sqrt{3} - 12\sqrt{9}$

$-6\sqrt{3} - 12 \cdot 3$

$\boxed{-6\sqrt{3} - 36}$

43.) Multiply: $-4\sqrt{x^3y^2} \cdot 3\sqrt{8x^2y^7}$

$-12\sqrt{8x^5y^9}$

$-12 \cdot 2x^2y^4\sqrt{2xy}$

$\boxed{-24x^2y^4\sqrt{2xy}}$

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44.) Multiply: $(5+\sqrt{20})(3-\sqrt{2})$ $= 15 - 5\sqrt{2} + 3\sqrt{20} - \sqrt{40}$

$15 - 5\sqrt{2} + 12\sqrt{5} - 2\sqrt{10}$

45.) Multiply: $(\sqrt{2}+2\sqrt{5})^2$

$(\sqrt{2}+2\sqrt{5})(\sqrt{2}+2\sqrt{5}) = 2 + 2\sqrt{10} + 2\sqrt{10} + 4\cdot 5$

$= 2 + 4\sqrt{10} + 20$

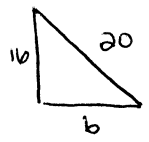
$= 22 + 4\sqrt{10}$

46.) Divide: $\dfrac{\sqrt{20}}{5\sqrt{2}}$

$= \dfrac{\sqrt{10}}{5}$

47.) Divide: $\dfrac{\sqrt{10}}{\sqrt{6}} \cdot \dfrac{\sqrt{6}}{\sqrt{6}} = \dfrac{\sqrt{60}}{6} = \dfrac{2\sqrt{15}}{6} = \dfrac{\sqrt{15}}{3}$

48.) Solve for the missing side of a right triangle that has a hypotenuse of 20 feet and a leg of 16 feet.



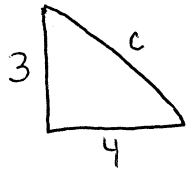
$16^2 + b^2 = 20^2$

$256 + b^2 = 400$

$b^2 = 144$

$b = 12$

49.) Solve for the hypotenuse of a right triangle that has leg lengths of 3 feet and 4 feet.



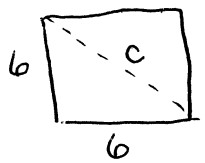
$3^2 + 4^2 = c^2$

$9 + 16 = c^2$

$25 = c^2$

$5 = c$

50.) Find the diagonal of a square that has a side length of 6 inches.



$6^2 + 6^2 = c^2$

$36 + 36 = c^2$

$72 = c^2$

$\sqrt{72} = c$

$\sqrt{36}\sqrt{2}$

$6\sqrt{2} = c$

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51.) Find the mean of the following set of data:
1, 1, 6, 7, 8, 13, 15, 21, 22, 30, 34

$\frac{158}{11} = 14.4$

52.) Find the median of the following set of data:
1, 1, 6, 7, 8, 13, 15, 21, 22, 30, 34

13

53.) Find the mode of the following set of data:
1, 1, 6, 7, 8, 13, 15, 21, 22, 30, 34

1

54.) What is the upper quartile of the following set of data?
1, 1, 6, 7, 8, 13, 15, 21, 22, 30, 34

22

55.) What is the interquartile range of the following set of data?
1, 1, 6, 7, 8, 13, 15, 21, 22, 30, 34

22 − 6 = 16

56.) What percent of the data is below the first quartile?

25%

57.) A marble is drawn from a bag containing 2 green, 4 red and 5 white marbles. What is the probability that the marble chosen will be red?

5 + 4 + 2 = 11 total

$\frac{\text{red}}{\text{total}} = \frac{4}{11} = 36\%$

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58.) The letters of the word ALGEBRA are written on index cards and placed in a brown bag. If one letter is selected at random, what is the probability that the letter drawn is an L?

$$\frac{L}{\text{total}} = \frac{1}{7} = \boxed{14\%}$$

59.) The letters of the word ALGEBRA are written on index cards and placed in a brown bag. If one letter is selected at random, what is the probability that the letter drawn is an A.or a B?

$$\frac{A \text{ or } B}{\text{total}} = \frac{3}{7} = \boxed{43\%}$$

60.) The letters of the word ALGEBRA are written on index cards and placed in a brown bag. If two letters are selected at random, what is the probability that the first letter drawn is an A and the second letter drawn is a G?

$$\frac{A}{\text{total}} \cdot \frac{G}{\text{total}} = \frac{2}{7} \cdot \frac{1}{6} = \frac{2}{42} = \frac{1}{21} = \boxed{4.8\%}$$